Virginia Saltwater Development Fund
Evaluation of a Proposal for the Development of a Research or Data Collection Project

Project Number: 0606-13 **Date:** August 30, 2006

Title: M) Prey Availability and Enhanced Production of Artificial Reefs for Recreational Fish and Native Oysters. .

> "The Virginia Saltwater Recreational Fishing Development Fund is to be used solely for the purpose of conserving and enhancing finfish taken by recreational anglers, enforcing laws related to natural resource conservation, improving recreational fishing opportunities, obtaining necessary data and conducting research for fisheries management, and creating or restoring habitat for species taken by recreational fishermen."
>
> Code of Virginia, Section 28.2-302.3

NOTE: Please read the entire scoresheet before beginning, then provide comments, and circle ( ) the appropriate score for each item. Thank You.

A. <u>Problem Description and Resolution (20 points)</u>

1. Comment on the adequacy of the problem description, background information, knowledge of available literature/data sources, and anticipated benefits.

The project description and background are adequate for an analysis of the project. There is a sound reason for analyzing the productivity of various reef structures in order to determine the most efficient and productive types since Virginia is engaged in an active artificial reef program for recreational fishermen and is increasingly considering reef structures to enhance oyster production. Study results documenting production of benthic resources will provide a basis for the comparison of various reef types to optimize reef development in the future.

The problem description and literature cited make note of documented increases in fish abundance and diversity on reefs versus "unprotected areas", of higher catch rates on areas with reefs than the same areas prior to reef deployment, and of reef areas being "buffered" against significant reductions compared to areas without reefs. These concepts are intuitively well established, but the study does not address the ongoing debate about the reason for these events – do reefs increase actual production of fish, or is the presence of fish as result of aggregation caused by the concentration of prey resources. The proposal leads the reader to believe that the

increased production of fish on reef sites (versus aggregation) is a well-established fact, when in fact this is still a subject of discussion.

2. Describe your views on the conceptual approach to solve the problem.

The conceptual approach seems sound. By measuring the epifaunal invertebrates on areas of identical size on each type of reef structure, the proposal should be able to compare the productivity of each reef type. The result is an ability to rank the reef structures' productivity as it relates to the production of forage for various finfish, determining which types are best suited for use in artificial reef development.
The analysis of stomach (gut) contents to look at predator-prey interactions establishes the link between the epifauna produced on the reef sites and their utilization by various finfishes as a food source. Again, a tool in determining which reef structure will provide the most attraction for various fish types.

SCORE (Circle one)	**Poor**				**Excellent**
	0	**5**	**(10)**	**15**	**20**

B. <u>Soundness of Project Design/Technical Approach (25 points)</u>

1. Is there sufficient information to technically evaluate the proposal?

The proposal provides sufficient information to evaluate the design and implementation of the proposal.

2. What are the strengths/weaknesses of the project design (thoroughness, practicality, methods, integration with other work, etc.)?

The project design seems suited to determining the availability of prey (benthic community) at the reef structures utilized in the project. The result is an ability to rank their relative "productivity".
The "gut-content" analysis portion of the study attempts to link the reef productivity (epifauna and intermediate prey attracted by the epifauna) to various species of fish in a scientific method. The proposal states the first choice is to use recreational fishermen in Lynnhaven as a source of fish/stomachs. However, this introduces an element without "controls" – raising the possibility of receiving fish/stomachs from fish that were not caught on any of the artificial structures deployed as a part of the study. A better methodology might involve utilizing recreational fishermen in conjunction with project personnel on site to harvest fish for analysis or to use the circular nets described in the Lipcius project..
Ultimately, the project hopes to identify by weight, the dietary

preference of different species and then link this to the reef type that provides the optimal production of that prey. Therein lies a potential problem – if the prey preferences are intermediate prey and not the epifauna sampled in the scrapings, then the two parts of the study are hard to link in a direct manner; they can be linked only if 1)there is a significant difference in the size or composition of the benthic community, and then 2) this is subsequently reflected in the size and make-up of the intermediate prey availability. Since this study will not directly monitor or sample the intermediate prey community, one must make assumptions about the relationship of the quantity of the underlying benthic community and the quantity of intermediate prey.

The proposal makes several references to the ability of this study to determine optimal placement and location for artificial reefs. The utilization of two different test sites within the same water body (Lynnhaven) may produce some clues about placement of reefs to allow for better productivity, but this reviewer feels the number and diversity of test sites is much too limited to provide any firm conclusions about reef placement. The water bodies and depths, for example, are much too similar to provide any real help with reef placement.

SCORE (Circle One)	**Poor**					**Excellent**
	0	**5**	**10**	**(15)**	**20**	**25**

C. Project Management and Experience/Qualifications of Personnel (15 points)

What is your opinion of the experience and capabilities of the Principal Investigator(s) to manage and conduct the work, the availability of facilities, and education and experience of assisting personnel.

Experience and capabilities of the principal investigator and assisting personnel and available facilities are good.

SCORE (Circle one)	**Poor**			**Excellent**
	0	**5**	**(10)**	**15**

D. Project costs (15 points)

Is the budget realistic and reasonable? Indicate any unreasonable costs.

The budget appears reasonable on its face. However, a couple of questions must be raised based upon the analysis of this project in conjunction with its coordinated project (Lipcius). First, both projects call for vessel rental (large

privateer), yet the daily rental rate is different. Second, the budget asks for 24 days of vessel rental in one place and 30 days in another, and charges for 30 days of vessel rental. Third, the companion project (Lipcius) calls for and charges for 24 days of vessel rental, so the question must be asked if the vessel usage and rental can be coordinated to lower the costs of one or both projects. Both projects call for analysis of "scrapings" - one for epifauna, the other oysters and mussels. There is no indication the "scrapings" will or will not be coordinated for cost-savings nor if this is even possible and why or why not. Travel is charged at $.58/mile, which should be checked against current state guidelines.
Boat fuel costs seem to be a bit high given the distance from launch facilities in Lynnhaven and that most boat travel will be in no-wake zones with minimal fuel usage; $50 per day at a cost of $3.25 per gallon is 15+gallons per day.
Overall, one must ask if the maximum level of coordination and cost savings have been explored between the companion studies, including possible cost savings in personnel. The Lipcius project, in particular is heavily weighted in personnel costs, and contains all of the costs to deploy the reefs.

SCORE (circle One)	**Poor**			**Excellent**
	0	**5**	**(10)**	**15**

E. Value of the Project to Fisheries Managers (25 points)

Do you believe the results of this project will further management of the species described? Will the results be useful to managers?

The project seems overly ambitious in the results it hopes to achieve. A good look at actual benthic community production as relates to reef types will help to quantify potential productivity and should be valuable in selecting reef types for future deployment. Gut-content analysis could yield some information relating to the productivity of different reefs as relates to specific prey preferences among species; however this reviewer believes this part of the study is somewhat less likely to yield results that can be translated into real life applications. Results relating to optimal artificial reef placement will be very limited and probably only applicable when looking at similar environmental, water quality, depth and habitat conditions as found in Lynnhaven during the study period. The results expected seem overstated, although there can be some good base line information generated.

SCORE (circle one)	**Poor**					**Excellent**
	0	**5**	**10**	**(15)**	**20**	**25**

PLEASE ADD ANY FURTHER COMMENTS ON THE PROPOSALS BELOW:

This reviewer feels it is hard to separate the Seitz and Lipcius projects. Taken together they are expensive and seem overly ambitious in the results expected. The Seitz prey study as relates to different reef structures seems to have the most relevance to recreational fishermen. Most of the Lipcius project is really about oyster and mussel production and probably should be funded from another source. The recreational fishery should really be looking at the prey analysis, as the primary benefit; monitoring finfish usage of the structures with video and diver observations also could yield some useful data about the structures and usage. One study that incorporates the recreational benefits would be best suited for RFAB funding; or, a cooperative project that incorporates other funding for the shellfish projects would seem to be appropriate.